Pressure-reducing valve type CDK

Product documentation

Screw-in valve

Operating pressure $p_{\text{max}}$: 500 bar
Volumetric flow rate $Q_{\text{max}}$: 22 l/min
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Overview pressure control valve type CDK

Pressure reducing valves are a type of pressure control valve. They maintain a largely constant outlet pressure even at a variable (higher) inlet pressure. Valve type CDK is a screw-in valve, and can be used in control blocks. The bore-holes required for mounting are easy to create. All versions oil-tight when closed.

Features and benefits:
- Zero leakage in closed state

Intended applications:
- General hydraulic systems
- Jigs
- Test benches

Design:
- Type CDK 3 - standard version, can be used for all applications.
- Type CDK 32 - version with low pressure dependence on changing pump inlet pressure and for usage at low pressure settings.
- Type CDK 35 - version with low flow resistance, however with higher pressure dependence on changing pump inlet pressures.

Version with connection blocks:
- For pipe connection (without/with pressure-limiting valve)
- For manifold mounting (without/with pressure-limiting valve)
- For manifold mounting (without/with pressure-limiting valve) with adapter plate for pipe connection
Available versions, main data

2.1 Screw-in valve

Circuit symbol:

NOTE
Flow direction A → P not shown, see "Flow direction" section in Chapter 3.1, "General"

Sample order:

CDK 3 -2 R -200

Pressure setting (bar) Pressure control valve *

Adjustment Table 2 Adjustment

Basic type and pressure range Table 1 Basic type and pressure range

* If there is no specified pressure setting, the valve will be set at the factory to the maximum value in the pressure range in question

<table>
<thead>
<tr>
<th>Type</th>
<th>Volumetric flow rate Q_{max} (lpm)</th>
<th>Pressure range p_{A} from ... to (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>-08</td>
</tr>
<tr>
<td>CDK 3</td>
<td>12</td>
<td>50 ... 450</td>
</tr>
<tr>
<td>CDK 3K</td>
<td></td>
<td>55 ... 310</td>
</tr>
<tr>
<td>CDK 32</td>
<td>6</td>
<td>30 ... 450</td>
</tr>
<tr>
<td>CDK 32K*</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>CDK 35</td>
<td>22</td>
<td>110 ... 450</td>
</tr>
<tr>
<td>CDK 35K*</td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

* Short version, available "fixed" only

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Description</th>
<th>Circuit symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>No designation</td>
<td>Fixed, can be adjusted using tool</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>Can be adjusted by hand, with lock nut (not for type CDK 3.K)</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Rotating grip with lock (not for type CDK 3.K)</td>
<td></td>
</tr>
</tbody>
</table>
2.2 Versions with individual connection block for pipeline connection

Sample order:

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Description</th>
<th>Connection</th>
<th>Circuit symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1/4</td>
<td>Pipe connection</td>
<td>G 1/4 (BSPP)</td>
<td><img src="image" alt="G 1/4 (BSPP)" /></td>
</tr>
<tr>
<td>-9/16-18 UNF</td>
<td>Pipe connection</td>
<td>9/16-18 UNF</td>
<td><img src="image" alt="9/16-18 UNF" /></td>
</tr>
<tr>
<td>-1/4-18 NPTF</td>
<td>Pipe connection, pressure switch in the load line</td>
<td>1/4-18 NPTF</td>
<td><img src="image" alt="1/4-18 NPTF" /></td>
</tr>
<tr>
<td>-1/2</td>
<td>Pipe connection, pressure-limiting valve, fixed, tool adjustable</td>
<td>G 1/2 (BSPP)</td>
<td><img src="image" alt="G 1/2 (BSPP)" /></td>
</tr>
<tr>
<td>-1/4 - DG..</td>
<td>Pipe connection, pressure-limiting valve, manually adjustable, with lock nut</td>
<td>G 1/4 (BSPP)</td>
<td><img src="image" alt="G 1/4 (BSPP)" /></td>
</tr>
</tbody>
</table>

NOTE: Connection M with reduced flow.

Table 4 Versions with pressure switch

<table>
<thead>
<tr>
<th>Coding</th>
<th>Setting range (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- DG 33</td>
<td>200 ... 700</td>
</tr>
<tr>
<td>- DG 34</td>
<td>100 ... 400</td>
</tr>
<tr>
<td>- DG 35</td>
<td>40 ... 210</td>
</tr>
<tr>
<td>- DG 36</td>
<td>4 ... 12</td>
</tr>
<tr>
<td>- DG 364</td>
<td>4 ... 50</td>
</tr>
<tr>
<td>- DG 365</td>
<td>12 ... 170</td>
</tr>
</tbody>
</table>
2.3 Versions with individual connection block for plate mounting

Sample order:

| CDK 35 -5 R | - SP | -100/300 | - 1/4 |

**Adapter plate**  Table 5 Connection block version

**Connection block**  Table 5 Connection block version

### Table 5 Connection block version

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Description</th>
<th>Circuit symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Plate mounting</td>
<td><img src="circuit1.png" alt="circuit symbol" /></td>
</tr>
<tr>
<td>SP</td>
<td>Plate mounting, pressure relief valve, fixed, can be adjusted using tool</td>
<td><img src="circuit2.png" alt="circuit symbol" /></td>
</tr>
<tr>
<td>P - ... - 1/4</td>
<td>Plate mounting</td>
<td><img src="circuit3.png" alt="circuit symbol" /></td>
</tr>
<tr>
<td>SP - ... /... - 1/4</td>
<td>Plate mounting, pressure relief valve, fixed, can be adjusted using tool, with adapter plate for pipeline connection</td>
<td><img src="circuit4.png" alt="circuit symbol" /></td>
</tr>
</tbody>
</table>
3 Parameters

3.1 General

General information

<table>
<thead>
<tr>
<th>Designation</th>
<th>Directly piloted 2-way pressure control valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>Ball seated valve</td>
</tr>
<tr>
<td>Model</td>
<td>Screw-in valve, valve for pipe connection, manifold mounting valve</td>
</tr>
<tr>
<td>Material</td>
<td>Steel; nitrided valve housing, electrogalvanised or ZNi sealing nuts and connection block, hardened and ground functional inner parts, Balls made of rolling bearing steel</td>
</tr>
<tr>
<td>Tightening torque</td>
<td>See Chapter 4, &quot;Dimensions&quot;</td>
</tr>
<tr>
<td>Installation position</td>
<td>As desired</td>
</tr>
</tbody>
</table>

Ports

- P = input (pump side or primary side)
- A = Load (secondary side)
- M = pressure gauge connection
- R = Tank connection

Markings apply to hydraulic schematics and assembly plans only. The markings are not stamped onto the valve housing. The ports are stamped on the versions for pipe connection and versions for manifold mounting. The coding can be found in the schematic overviews or the dimension diagrams in Chapter 4, "Dimensions".

Flow direction

P → A: Pressure control function
A → P: Only possible if the pressure on the pump side is lower than the load pressure.

NOTE

In the case of flow rates of A → P with more than Q_A_max or if pressure surges or pressure pulsations are to be expected, a separate bypass check valve is to be provided.

Hydraulic fluid

Hydraulic oil: according to part 1 to 3; ISO VG 10 to 68 according to DIN ISO 3448
Viscosity limits: min. approx. 4, max. approx. 1500 mm²/s
opt. operation approx. 10... 500 mm²/s.
Also suitable for biologically degradable hydraulic fluids type HEPG (polyalkylene glycol) and HEES (synthetic ester) at operating temperatures up to approx. +70°C.

Cleanliness level

ISO 4406
21/18/15...19/17/13

Temperatures

Ambient: approx. -40 ... +80°C, Fluid: -25 ... +80°C, Note the viscosity range!
Permissible temperature during start: -40°C (observe start-viscosity!), as long as the service temperature is at least 20K higher for the following operation.
Biologically degradable pressure fluids: Observe manufacturer’s specifications. By consideration of the compatibility with seal material not over +70°C.
Pressure and flow rate

Operating pressure
- On the pump side \( p_{\text{P max}} = 500 \) bar
- Load side \( p_{A \max} \), see Table for basic version in Chapter 2, "Available versions, main data"
- Return \( p_R \leq 20 \) bar

Pressure dependence
The pressure ratio as designed causes a slight change to the actual pressure \( p_A \) in conjunction with a variable pump pressure \( p_P \).

<table>
<thead>
<tr>
<th>Type</th>
<th>Pressure range (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-08</td>
</tr>
<tr>
<td>CDK 3</td>
<td>± 1.3</td>
</tr>
<tr>
<td>CDK 32</td>
<td>± 0.7</td>
</tr>
<tr>
<td>CDK 35</td>
<td>± 2.7</td>
</tr>
</tbody>
</table>

\( p_R \pm 10 \) bar results in a pressure change for \( A \) of \( p_A \).

Flow rate
\( Q_{P \rightarrow A \max} = 6 \text{ lpm (CDK 32)} \)
\( = 12 \text{ lpm (CDK 3)} \)
\( = 22 \text{ lpm (CDK 35)} \)
\( Q_{A \rightarrow P \max} = 25 \text{ lpm} \) See note in Chapter 3, "Parameters"
Characteristics

Oil viscosity approx. 60 mm²/s

\( p_A - Q_{P \rightarrow A} - \text{characteristics} \)

The pressure setting applies for \( Q_{P \rightarrow A} \rightarrow 0 \text{ lpm} \). If \( Q > 0 \), i.e. the connected consumer is moving, the secondary pressure \( p_s \) drops slightly. The pressure \( p_s \) is set according to the information in the order at \( p_s \approx 1.1 \ p_A \).

⚠️ **CAUTION**

Risk of injury on overloading components due to incorrect pressure settings!
Risk of minor injury.
- Pay attention to the maximum operating pressure of the pump and the valves.
- Always monitor the pressure gauge when setting and changing the pressure.

\( Q, \text{flow rate (lpm)}; p_A, \text{outlet pressure (bar)} \)

\( \Delta p - Q - \text{Characteristic curve } P \rightarrow A \text{ or } A \rightarrow P \)

NOTE

For this purpose, please observe the additional information under the point "Flow direction".
### Weight

<table>
<thead>
<tr>
<th>Screw-in valve</th>
<th>Type</th>
<th>Identifier</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDK..</td>
<td></td>
<td>0.7 kg</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Version with single connection block</th>
<th>Identifier</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/4</td>
<td>1.3 kg</td>
</tr>
<tr>
<td></td>
<td>9/16-18 UNF</td>
<td>1.3 kg</td>
</tr>
<tr>
<td></td>
<td>1/4-18 NPTF</td>
<td>1.3 kg</td>
</tr>
<tr>
<td></td>
<td>1/4 - DG..</td>
<td>1.6 kg</td>
</tr>
<tr>
<td></td>
<td>1/4 S(SR)</td>
<td>1.6 kg</td>
</tr>
<tr>
<td></td>
<td>P</td>
<td>1.1 kg</td>
</tr>
<tr>
<td></td>
<td>SP</td>
<td>1.6 kg</td>
</tr>
<tr>
<td></td>
<td>P-../..-1/4</td>
<td>1.5 kg</td>
</tr>
<tr>
<td></td>
<td>SP-../..-1/4</td>
<td>2.0 kg</td>
</tr>
</tbody>
</table>
4 Dimensions

All dimensions in mm, subject to change.

4.1 Screw-in valve

CDK 3..

CDK 3.K

* CDK.3.-08.

1. Sealing option
2. Stop
3. KANTSEAL DKAR00021-N90 NBR 90 Sh 23.52x26.88x1.68
4. Seal edge
5. Sealing nut
6. O-ring 21.95x1.78 (21.89x2.62) AU 90 S
7. Valve housing

NOTE
For this purpose, please also observe the information on threads and on producing requirements in Chapter 5.2, "Assembly information"!

Type CDK 3.K: Do not turn set screw 8 beyond the red marker ring!

Adjustment

No designation

Coding R

Coding H

* CDK.3.-08.
4.2 Mounting hole

Location for sealing (inlet to outlet): at the contact area between the facial sealing edge of the tapped journal of the valve housing and the stepped shoulder of the tapping hole of the location thread.

The stepped shoulder is depicted with the normal 118° drill tip angle for steel.

Therefore reaming of the hole and bevels to help the seals slip in are not necessary.

The sealing of the attached valve and its fixing at the manifold body are made by a sealing nut with a fitting seal and an O-ring. Additionally the passage between port A and T is sealed at the screwin port and the internal piston.

Counterbore 0.5\(^{-0.1}\) (max. \(\phi 30^{-0.1}\)), exclusively required for pressures at A in excess of 100 bar.
**4.3 Version with single connection block for pipe connection**

CDK 3..- 1/4  
CDK 3..- 1/4 - DG..

![Diagram of CDK 3..- 1/4 and CDK 3..- 1/4 - DG..]

<table>
<thead>
<tr>
<th>Coding</th>
<th>Connections P, A, M</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1/4</td>
<td>6 1/4 (BSPP)</td>
</tr>
<tr>
<td>- 1/4</td>
<td>ISO 228-1</td>
</tr>
</tbody>
</table>

CDK 3..- 9/16-18 UNF  
CDK 3..- 9/16-18 UNF - DG..

![Diagram of CDK 3..- 9/16-18 UNF and CDK 3..- 9/16-18 UNF - DG..]

<table>
<thead>
<tr>
<th>Coding</th>
<th>Connections P, A, M</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 9/16-18 UNF</td>
<td>9/16-18 UNF</td>
</tr>
<tr>
<td>- 9/16-18 UNF-DG..</td>
<td>ANSI B1.1, SAE-6</td>
</tr>
</tbody>
</table>

1. Screw-in valve, as per Chapter 4.1, "Screw-in valve"  
2. Pressure switch DG 3.. as per D 5440  
3. Without DG 3.. (can be retrofitted here)
### CDK 3..- 1/4-18 NPTF

<table>
<thead>
<tr>
<th>Coding</th>
<th>Connections P, A, M</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1/4-18 NPTF</td>
<td>1/4-18 NPTF</td>
</tr>
<tr>
<td>- 1/4-18 NPTF-DG..</td>
<td>ANSI B1.20.3</td>
</tr>
</tbody>
</table>

1. Screw-in valve, as per Chapter 4.1, "Screw-in valve"
2. Pressure switch DG 3.. as per D 5440
3. Without DG 3.. (can be retrofitted here)

### CDK 3..- 1/2

<table>
<thead>
<tr>
<th>Coding</th>
<th>Connections P, A</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1/2</td>
<td>G 1/2 (BSPP)</td>
</tr>
</tbody>
</table>

1. Screw-in valve, as per Chapter 4.1, "Screw-in valve"
CDK 3..- 1/4 S
CDK 3..- 1/4 SR

1. Fixed
2. Adjustable

<table>
<thead>
<tr>
<th>Coding</th>
<th>Connections P, A, R</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 1/4 S</td>
<td>G 1/4 (BSPP)</td>
</tr>
<tr>
<td>- 1/4 SR</td>
<td>ISO 228-1</td>
</tr>
</tbody>
</table>
4.4 Version with connection block for manifold mounting

CDK 3 - .. - P

CDK 3 - .. - SP

1  Sealing with O-rings 7.65x1.78 NBR 90 Sh

For this purpose, please observe the hole pattern in Chapter 4.5, "Base plate hole pattern".

CDK 3(32, 35) - .. - P - .. - 1/4

CDK 3(32, 35) - .. - SP - .. - 1/4

1  Adapter plate (connection block for pipe connection)
2  Sealing with O-rings 7.65x1.78 NBR 90 Sh

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Connections P, A, R</th>
</tr>
</thead>
<tbody>
<tr>
<td>- P ..</td>
<td>G 1/4 (BSPP)</td>
</tr>
<tr>
<td>- SP ..</td>
<td>ISO 228-1</td>
</tr>
</tbody>
</table>
4.5 Base plate hole pattern

The hole pattern corresponds to that of type ADM 11 P as per D 7120. The O-ring counterbore for the drain port R (or L) is present but is only required for type CDK...-SP.

4.6 Tapped plugs

The mounting holes can be sealed with tapped plugs if necessary; for example, if the assembly of standardised basic bodies is to be carried out with or without screw-in valves as required.

Passage open

1. Tapped plug M24x1.5 DIN 910
2. Sealing ring A25x30x2 DIN 7603-Cu

Passage closed

1. O-ring 21.95x1.78 AU 90 Sh
2. KANTSEAL DKAR00021-N90 NBR 90 Sh 23.52 x 26.88 x 1.68
3. Tapped plug and locking tapped plug complete order no.. 7710 029
5 Assembly, operation and maintenance recommendations

5.1 Intended use

This valve is intended exclusively for hydraulic applications (fluid technology).

The user must observe the safety measures and warnings in this documentation.

**Essential requirements for the product to function correctly and safely:**

- All information in this documentation must be observed. This applies in particular to all safety measures and warnings.
- The product must only be assembled and put into operation by qualified personnel.
- The product must only be operated within the specified technical parameters. The technical parameters are described in detail in this documentation.
- All components must be suitable for the operating conditions in the event of application in an assembly.
- The operating and maintenance manual of the components, assemblies and the specific complete system must also always be observed.

**If the product can no longer be operated safely:**

1. Remove the product from operation and mark it accordingly.
   ✓ It is then not permitted to continue using or operating the product.

5.2 Assembly information

The product must only be installed in the complete system with standard and compliant connection components (screw fittings, hoses, pipes, fixtures etc.).

The product must be shut down correctly prior to dismounting (in particular in combination with hydraulic accumulators).

**DANGER**

Risk to life caused by sudden movement of the hydraulic drives when dismantled incorrectly!

Risk of serious injury or death.

- Depressurise the hydraulic system.
- Perform safety measures in preparation for maintenance.
5.2.1 Screwing in the screw-in valve

1. Before screwing in the valve, loosen the lock nut and sealing nut until the travel stop.
2. Screw in the valve and tighten with the specified torque. The metallic sealing of the inlet to the outlet is formed between the facial sealing edge of the valve and the shoulder of the stepped hole in the basic body.
3. Tighten lock nut and sealing nut with specified torque.

* Values in brackets apply to pressure ranges of type CDK 3.-08 (-81)

5.2.2 Setting the pressure

If there is no specified pressure setting, the valve will be set at the factory to the maximum value in the pressure range in question.

Guideline values for pressure adjustment

<table>
<thead>
<tr>
<th>Pressure adjustment Pressure control valve</th>
<th>Pressure adjustment Pressure control valve</th>
<th>Pressure adjustment Pressure relief valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identifier</td>
<td>Δp/revolution (bar/R)</td>
<td>Identifier</td>
</tr>
<tr>
<td>08</td>
<td>37</td>
<td>081</td>
</tr>
<tr>
<td>1</td>
<td>25</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>51</td>
</tr>
</tbody>
</table>

**CAUTION**

Risk of injury on overloading components due to incorrect pressure settings!
Risk of minor injury.
- Pay attention to the maximum operating pressure of the pump and the valves.
- Always monitor the pressure gauge when setting and changing the pressure.
5.2.3 Creating the mounting hole

See description in Chapter 4.2, "Mounting hole".

5.2.4 Making base plate

The hole pattern corresponds to that of type ADM 11 P as per D 7120. The O-ring counterbore for the drain port R (or L) is present but is only required for type CDK...SP.

See hole pattern in Chapter 4.5, "Base plate hole pattern"
5.3 Operating instructions

Note product configuration and pressure / flow rate

The statements and technical parameters in this documentation must be strictly observed. The instructions for the complete technical system must also always be followed.

NOTE

- Read the documentation carefully before usage.
- The documentation must be accessible to the operating and maintenance staff at all times.
- Keep documentation up to date after every addition or update.

CAUTION

Risk of injury on overloading components due to incorrect pressure settings!
Risk of minor injury.
- Pay attention to the maximum operating pressure of the pump and the valves.
- Always monitor the pressure gauge when setting and changing the pressure.

Purity and filtering of the hydraulic fluid

Fine contamination can significantly impair the function of the hydraulic component. Contamination can cause irreparable damage.

Examples of fine contamination include:
- Metal chips
- Rubber particles from hoses and seals
- Dirt due to assembly and maintenance
- Mechanical debris
- Chemical ageing of the hydraulic fluid

NOTE

Neue Druckflüssigkeit vom Hersteller hat nicht unbedingt die erforderliche Reinheit. Beim Einfüllen von Druckflüssigkeit ist diese zu filtern.

Für den reibungslosen Betrieb auf die Reinheitsklasse der Druckflüssigkeit achten. (siehe auch Reinheitsklasse im Chapter 3, "Parameters")

Mitgeltendes Dokument: D 5488/1 Ölempfehlung

5.4 Maintenance information

Check that the product is securely fastened in the mounting hole at regular intervals, but at least once per year.

Conduct a visual inspection at regular intervals, but at least once per year, to check if the hydraulic connections are damaged. If external leakages are found, shut down and repair the system.

Clean the device surface of dust deposits and dirt at regular intervals, but at least once per year.
6.1 Planning information

The pressure reducing valve is zero-leakage when closed. The pressure may therefore change if the product is used in control circuits with long pressure holding periods without switching. For example, this is the case in control circuits in which pallets are clamped separately.

The pressure may increase if the temperature increases (e.g. in the event of sun exposure) or if influenced by additional external loads. When the pump is switched off: The pressure can drop if the temperature falls (e.g. cooling down at night) or if loads are removed.

These effects are particularly noticeable with short, rigid pipe connections. Hoses and additional volume (e.g. AC 13 miniature accumulator in accordance with D 7571) help to compensate such (negative) pressure fluctuations.

The ratio of thermal expansion coefficient to coefficient of compressibility (theoretically 1:10, i.e. \( \Delta T = 1K \rightarrow \Delta p \approx 10 \text{ bar} \)) is based on the fact described above. As consumers, pipes and hoses will yield, in reality (based on experience) a ratio of approx. 1:1 can be assumed.
6.2 Application examples

Example of a version with large flow rates $Q_{A\rightarrow P}$
Example: $Q_P = 15 \text{ lpm}$ [formula]

Example of a version with undesired return flow
Use in valve bank
Type BVH 11 (D 7788 BV)

KA 28 1 S K/ Z 2.7
- AX 14 - 5/150
- BVH 11 W/CZ5/80/GM
- BVH 11 G/CZ5/40/GM
- 82 - AC1002/50/3A
- X 24

1. E.g. type RK 2G in accordance with D 7445
2. $Q_{\text{ret}} = 45 \text{ l/min}$
3. $Q_P = 15 \text{ l/min}$
4. Type CDK 3-2-1/4

1. e.g. Type RK 1E in accordance with D 7445
   (here, screwed into connection A on the CDK 3 valve)
2. Type CDK 3-2-1/4-DG 34

1. CDK 3-5 - 80
2. CDK 3-5 - 40
Further information

Additional versions
- Pressure-reducing valve type CLK: D 7745 L
- Pressure-reducing valve type DK, DZ and DLZ: D 7941
- Pressure-reducing valve type ADM: D 7120
- Pressure control valve type CMV, CMVZ, CSV and CSVZ: D 7710 MV
- Pressure-controlled shut-off valve type CNE: D 7710 NE
- Throttle valve and shut-off valve CAV: D 7711
- Check valve type CRK, CRB and CRH: D 7712
- Pressure-controlled shut-off valve type CDSV: D 7876
- Throttle valve and throttle check valve type CQ, CQR and CQV: D 7713

Application
- Valve bank (directional seated valve) type VB: D 7302
- Valve bank (directional seated valve) type BWN and BWH: D 7470 B/1
- Valve bank (nominal size 6) type BA: D 7788
- Valve bank (directional seated valve) type BVH: D 7788 BV
- Intermediate plate type NZP: D 7788 Z